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09/874,552	06/04/2001	Warren B. Jackson	D/A1214	5853

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EXAMINER	
BELL, MELTIN	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/874,552	JACKSON ET AL.	
	Examiner	Art Unit	
	Meltin Bell	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-45 is/are pending in the application.

4a) Of the above claim(s) 44 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-43 and 45 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 17 May 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ ~~Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)~~ Paper No(s)/Mail Date 5/17/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This non-final action is responsive to application **09/874,552** filed **06/04/2001** as well as the Drawing Corrections and Specification Amendment filed 05/17/2004. Claims 1-43 and 45 filed by the applicant have been entered and examined. Claim 44 has been canceled. An action on the merits of claims 1-43 and 45 appears below.

Claim Interpretation

Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. > E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted "in view of the specification" without importing limitations from the specification into the claims unnecessarily).< In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See also In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow.... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed.... An

essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.").

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6, 14, 26 and 39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not address transforming the problem solution.

Claim Rejections - 35 USC § 103

Applicant's 35 USC 102 arguments with respect to claims 1-17, 22-29, 34-41 and 43 have been considered but are moot in view of new ground(s) of rejection.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the

> prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Office presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Office to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-17, 22-29 and 34-45 are rejected under 35 U.S.C. 103(a) as being obvious over *Gounares et al* USPN 6,088,690 "Method and apparatus for adaptively solving sequential problems in a target system utilizing evolutionary computation techniques" (July 11, 2000) in view of *Black* USPN 6,269,351 "Method and system for training an artificial neural network" (Patented July 31, 2001; Filed March 31, 1999).

Regarding claim 1:

Gounares et al teach,

- receiving a problem statement from the applications module (FIGS. 1, 25; column 2, lines 54-60, "The above identified...population of organisms")

- providing the solving module with said configuration parameters (column 5, lines 1-7, "The software testing...the target system"; column 12, lines 58-60, "The system of...application of mutagens"; column 25, lines 46-64, "The operation of...system for operation"; column 26, lines 5-28, "genetic testing engine...system under test")

- selecting a set of configuration parameter vectors (FIGS. 17-18; column 10, lines 23-30, "A property delta...system under test"; TABLE 3)

- determining a set of search space points (column 8, lines 17-35, "The present invention...by product drivers")

- perform a partial search with said configuration parameter vectors (column 18, lines 26-45, "Step 1005 and...to step 1007")

- determining actual solver behavior (column 23, lines 55-60, "the software testing...target software system")

- performing a said solver iteration step when said solver iteration step is selected, comprising the steps of determining new actual solver behavior and determining whether to repeat said solver iteration step (FIG. 4; column 4, lines 18-30, "Pairs of chromosomes...of test cases")

- providing the solution to the applications module (FIG. 23)

However, *Gounares et al* doesn't explicitly teach predicting an expected problem solver behavior associated with configuration parameters for said problem statement, reviewing said actual solver behavior incrementally to determine if a problem solution has been found, wherein reviewing comprises comparing said expected solver behavior with said actual solver behavior, determining whether

to perform a solver iteration step or to request the complexity module to perform an adaptation step if a problem solution has not been found, repeating said solver iteration step until said adaptation step is selected, comparing said actual solver behavior with said expected solver behavior when said adaptation step is selected, requesting the complexity module to perform said adaptation step, performing said adaptation step, comprising the steps of modifying said configuration parameters within the complexity module, configuring the solving module with said modified configuration parameters, determining expected solver behavior associated with said modified configuration parameters for said problem statement, selecting an algorithm to calculate a revised problem solution, determining a revised actual solver behavior associated with said modified configuration parameters for said problem statement, reviewing said revised actual solver behavior to determine if a problem solution has been found, determining whether to perform said solver iteration step or to request the complexity module to perform another adaptation step if a problem solution has not been found, and repeating said iteration step until said adaptation step is selected or repeating said adaptation step until a problem solution is found while *Black* teaches,

- predicting an expected problem solver behavior associated with configuration parameters for said problem statement (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ... provide better representation"; column 22, lines 66-67, "System

201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")

- reviewing said actual solver behavior incrementally to determine if a problem solution has been found (column 13, lines 14-24, "An additional technique ... the termination criterion"), wherein reviewing comprises comparing said expected solver behavior with said actual solver behavior (column 3, lines 18-20, "The expression for ... training data output")

- determining whether to perform a solver iteration step or to request the complexity module (column 16, lines 20-31, "Automated optimization is ... set error goal") to perform an adaptation step (column 3, lines 42-50, "The weights throughout ... to the ANN") if a problem solution has not been found (Figs. 4-5, 13-14; column 6, lines 18-23, "As a technical ... ANN training methods"; column 13, lines 14-24, "An additional technique ... the termination criterion")

- repeating said solver iteration step until said adaptation step is selected (column 13, lines 14-24, "An additional technique ... the termination criterion")

- comparing said actual solver behavior with said expected solver behavior when said adaptation step is selected (column 13, lines 14-24, "An additional technique ... the termination criterion")

- requesting the complexity module to perform said adaptation step (Fig. 12; column 20, lines 17-40, "If at step ... any more weights")

- performing said adaptation step, comprising the steps of modifying said configuration parameters within the complexity module, configuring the solving module with said modified configuration parameters, determining expected solver

behavior associated with said modified configuration parameters for said problem statement, selecting an algorithm to calculate a revised problem solution, determining a revised actual solver behavior associated with said modified configuration parameters for said problem statement, reviewing said revised actual solver behavior to determine if a problem solution has been found, determining whether to perform said solver iteration step or to request the complexity module to perform another adaptation step if a problem solution has not been found, and repeating said iteration step until said adaptation step is selected (column 3, lines 13-50, "Most training algorithms ... to the ANN")
- repeating said adaptation step until a problem solution is found (column 13, lines 14-24, "An additional technique ... the termination criterion")

Motivation – The portions of the claimed method would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal.

Regarding claim 2:

The rejection of claim 2 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the reference. Claim 2's limitations difference is taught in *Black*:

- the step of selecting an algorithm to calculate an initial problem solution (column 4, lines 64-67, "the present invention ... initializes an artificial"; column 5, lines 1-4, "neural network by ... artificial neural network")

Regarding claim 3:

The rejection of claim 3 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the reference. Claim 3's limitations difference is taught in *Gounares et al*:

- the step of refining the configuration parameters provided to the solving model (column 4, lines 18-30, "Pairs of chromosomes...or test cases")

Regarding claim 4:

The rejection of claim 4 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the reference. Claim 4's limitations difference is taught in *Gounares et al*:

- an adaptive constraint problem solver (column 11, lines 42-67, "A further type...the target system")

Regarding claim 5:

The rejection of claim 5 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the reference. Claim 5's limitations difference is taught in *Gounares et al*:

- the step of transforming said problem statement after receiving said problem statement from the applications module (FIG. 4)

Black:

- the step of transforming said problem statement after receiving said problem statement from the applications module (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 6:

The rejection of claim 6 is similar to that for claim 5 as recited above since the stated limitations of the claim are set forth in the reference. Claim 6's limitations difference is taught in *Gounares et al*:

- the step of transforming said problem solution before providing said problem solution to the applications module (FIG. 8)

Black:

- the step of transforming said problem solution before providing said problem solution to the applications module (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 7:

The rejection of claim 7 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the reference. Claim 7's limitations difference is taught in *Black*:

- said configuration parameters include problem configuration parameters and solver configuration parameters (Fig. 3; column 1, lines 26-35, "an ANN is ...

training data outputs"; The examiner notes that the problem and solver configuration parameters are different layers of a multiple layer neural network.)

Regarding claim 8:

The rejection of claim 8 is similar to that for claim 7 as recited above since the stated limitations of the claim are set forth in the reference. Claim 8's limitations difference is taught in *Black*:

- transforming said problem configuration parameters before providing said problem configuration parameters to the solving module (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 9:

The rejection of claim 9 is similar to that for claim 1 as recited above since the stated limitations of the claim are set forth in the reference. Claim 9's limitations difference is taught in *Gounares et al*:

- choosing a set of default configuration parameter vectors (column 10, lines 20-30, "There are several...system under test")

- selecting an initial minimum point (column 10, TABLE 3, Before a_1)

- performing a local search (column 4, lines 1-17, "In general, the...high fitness rating")

- evaluating actual behavior to determine whether to repeat a local search or select a different solver algorithm (FIG. 22)

- repeating a local search with a second minimum point when the step of repeating a local search is selected (column 20, lines 1-20, "A process of...to step 2105")

- revising the set of configuration parameter vectors for each search performed (column 4, lines 18-30, "Pairs of chromosomes...or test cases")

Regarding claim 10:

Gounares et al further teach,

- an input device for providing the problem statement (FIG. 25: items 2540, 2542, 2549)

- a computer coupled to the output of said input device (FIG. 25: items 2520, 2521)

- a memory portion coupled to the computer comprising (FIG. 25: item 2522):

- software for receiving the problem statement from said input device (item 2526)

- software for determining solver configuration parameter vectors (item 2535)

- software for configuring a problem solver (item 2536)

- software for performing a partial search with said configuration parameter vectors (item 2555)

- software for determining actual solver behavior and determining whether a solution has been found, wherein determining whether a solution has been found comprises comparing said expected solver behavior and said actual solver behavior (item 2527; column 11, lines 8-24, "Whenever a chromosome ... additional notational conveniences")

- output means for providing a solution statement (items 2547, 2549)

However, *Gounares et al* doesn't explicitly teach software for predicting expected solver behavior, software for determining actual solver behavior and incrementally determining whether a solution has been found, wherein

determining whether a solution has been found comprises comparing said expected solver behavior and said actual solver behavior, software for determining whether to perform a solver iteration step or to perform an adaptation step or software for performing an adaptation step, comprising modifying said configuration parameters and reconfiguring said problem solver while *Black* teaches,

- software for predicting expected solver behavior (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ... provide better representation"; column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")
- software for determining actual solver behavior and incrementally determining whether a solution has been found (column 13, lines 14-24, "An additional technique ... the termination criterion"), wherein determining whether a solution has been found comprises comparing said expected solver behavior and said actual solver behavior (column 3, lines 18-20, "The expression for ... training data output")
- software for determining whether to perform a solver iteration step or to perform an adaptation step (column 3, lines 42-50, "The weights throughout ... to the ANN "; column 16, lines 20-31, "Automated optimization is ... set error goal")
- software for performing an adaptation step, comprising modifying said configuration parameters and reconfiguring said problem solver (Fig. 12; column

3, lines 13-50, "Most training algorithms ... to the ANN"; column 20, lines 17-40, "If at step ... any more weights")

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal.

Regarding claim 11:

The rejection of claim 11 is similar to that for claim 10 as recited above since the stated limitations of the claim are set forth in the reference. Claim 11's limitations difference is taught in *Gounares et al*:

- an adaptive constraint problem solver (column 11, lines 42-67, "A further type...the target system")

Regarding claim 12:

The rejection of claim 12 is similar to that for claim 10 as recited above since the stated limitations of the claim are set forth in the references. Claim 12's limitations difference is taught in *Gounares et al*:

- software including a learning module for refining said expected problem solver behavior (column 22, lines 20-32, "These four actions...efficient tests cases")

Regarding claim 13:

The rejection of claim 13 is similar to that for claim 10 as recited above since the stated limitations of the claim are set forth in the references. Claim 13's limitations difference is taught in *Gounares et al*:

- a problem transformer module for transforming said problem statement after receiving said problem statement from said input device (FIG. 4)

Black:

- a problem transformer module for transforming said problem statement after receiving said problem statement from said input device (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 14:

The rejection of claim 14 is similar to that for claim 10 as recited above since the stated limitations of the claim are set forth in the references. Claim 14's limitations difference is taught in *Gounares et al*:

- a problem transformer module for transforming said problem statement before providing said problem solution to said output device (FIG. 8)

Black:

- a problem transformer module for transforming said problem statement before providing said problem solution to said output device (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 15:

The rejection of claim 15 is similar to that for claim 10 as recited above since the stated limitations of the claim are set forth in the reference. Claim 15's limitations difference is taught in *Black*:

- said configuration parameters include problem configuration parameters and solver configuration parameters (Fig. 3; column 1, lines 26-35, "an ANN is ... training data outputs" ; The examiner notes that the problem and solver configuration parameters are different layers of a multiple layer neural network.)

Regarding claim 16:

The rejection of claim 16 is similar to that for claim 15 as recited above since the stated limitations of the claim are set forth in the reference. Claim 16's limitations difference is taught in *Black*:

- transforming said problem configuration parameters before providing said problem configuration parameters to said solving module (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 17:

The rejection of claim 17 is similar to that for claim 10 as recited above since the stated limitations of the claim are set forth in the references. Claim 17's limitations difference is taught in *Gounares et al*:

- a data structure, said data structure containing configuration parameters and expected behaviors for a plurality of problem types (column 6, lines 50-67, "program modules include...2521, a system"; column 7, lines 1-34, "memory 2522, and...exemplary operating environment")

Regarding claim 22:

Gounares et al further teach,

- an input device for providing the primary goal for the task to be performed (FIG. 25: items 2540, 2542, 2549)

- a computer coupled to the output of said input device (FIG. 25: item 2520)

- a memory portion coupled to said computer comprising (FIG. 25):

- a complexity module for configuring a problem statement and determining expected solver behavior (FIG. 4)

- a synthesis module for determining configuration parameter vectors (FIG. 8)

- comparison means for comparing said actual solver behavior with said expected solver behavior and determining whether a problem solution has been found (items 404, 418, 1003, 1006, 1500, 2108, 2202, 2207, 2521; FIG. 22; column 11, lines 8-24, "Whenever a chromosome ... additional notational conveniences")

- output means for providing a statement of the problem solution (items 2547, 2549)

However, *Gounares et al* doesn't explicitly teach a complexity module for configuring a problem statement and predicting expected solver behavior or a controllable solving module coupled to said complexity module for determining actual solver behavior while *Black* teaches,

- a complexity module for configuring a problem statement and predicting expected solver behavior (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ...

provide better representation"; column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")

- a controllable solving module coupled to said complexity module (column 16, lines 20-31, "Automated optimization is ... set error goal") for determining actual solver behavior (column 13, lines 14-24, "An additional technique ... the termination criterion")

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal.

Regarding claim 23:

The rejection of claim 23 is similar to that for claim 22 as recited above since the stated limitations of the claim are set forth in the references. Claim 23's limitations difference is taught in *Gounares et al*:

- an adaptive constraint problem solver (column 11, lines 42-67, "A further type...the target system")

Regarding claim 24:

The rejection of claim 24 is similar to that for claim 22 as recited above since the stated limitations of the claim are set forth in the references. Claim 24's limitations difference is taught in *Gounares et al*:

- a learning module (column 22, lines 20-32, "These four actions... efficient tests cases")

Regarding claim 25:

The rejection of claim 25 is similar to that for claim 22 as recited above since the stated limitations of the claim are set forth in the references. Claim 25's limitations difference is taught in *Gounares et al*:

- a problem transformer module for transforming said problem statement after receiving said problem statement from said input device (FIG. 4)

Black:

- a problem transformer module for transforming said problem statement after receiving said problem statement from said input device (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 26:

The rejection of claim 26 is similar to that for claim 22 as recited above since the stated limitations of the claim are set forth in the references. Claim 26's limitations difference is taught in *Gounares et al*:

- a problem transformer module for transforming said problem solution before providing said problem solution to said output means (FIG. 8)

Black:

- a problem transformer module for transforming said problem solution before providing said problem solution to said output means (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 27:

The rejection of claim 27 is similar to that for claim 22 as recited above since the stated limitations of the claim are set forth in the reference. Claim 27's limitations difference is taught in *Black*:

- said configuration parameters include problem configuration parameters and solver configuration parameters (Fig. 3; column 1, lines 26-35, "an ANN is ... training data outputs"; The examiner notes that the problem and solver configuration parameters are different layers of a multiple layer neural network.)

Regarding claim 28:

The rejection of claim 28 is similar to that for claim 27 as recited above since the stated limitations of the claim are set forth in the reference. Claim 28's limitations difference is taught in *Black*:

- transforming said problem configuration parameters before providing said problem configuration parameters to said solving module (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 29:

The rejection of claim 29 is similar to that for claim 22 as recited above since the stated limitations of the claim are set forth in the references. Claim 29's limitations difference is taught in *Gounares et al*:

- said complexity module comprises a data structure, said data structure containing configuration parameters and expected behaviors for a plurality of problem types (column 6, lines 50-67, "program modules include...2521, a system"; column 7, lines 1-34, "memory 2522, and...exemplary operating environment")

Regarding claim 34:

Gounares et al further teach,

- means for receiving a problem statement (FIG. 25: item 2540)

- means for determining expected solver behavior associated with said problem statement (FIG. 25: item 2520)

- means for providing configuration parameters for a plurality of problems (FIG. 25: item 2549)

- means for determining a set of configuration parameter vectors (FIG. 25: item 2542)

- means for performing a partial search with said configuration parameter vectors (column 18, lines 26-45, "Step 1005 and...to step 1007"; FIG. 9)

- means for calculating actual solver behavior (column 23, lines 55-60, "the software testing...target software system"; FIG. 4)

- means for reviewing said actual solver behavior to determine if a problem solution has been found, wherein reviewing comprises comparing said expected solver behavior to said actual solver behavior (FIGS. 15, 22; column 11, lines 8-24, "Whenever a chromosome ... additional notational conveniences")

- means for determining whether to perform a solver iteration step or to request an adaptation step if a problem solution has not been found (FIGS. 10, 21)

- means for performing a solver iteration step, comprising performing another search step, calculating a revised actual solver behavior and determining whether to repeat said solver iteration step (column 4, lines 18-30, "Pairs of chromosomes...of test cases")

- means for comparing said actual solver behavior with said expected solver behavior (column 11, lines 8-24, "Whenever a chromosome...additional notational conveniences")

- means for requesting performance of an adaptation step (column 2, lines 13-51, "Given that there...target software systems"; column 22, lines 20-48, "These four actions...complex test cases")

- means for performing an adaptation step, comprising modifying said configuration parameters, determining a revised expected problem solver behavior, and providing said modified configuration parameters and said revised expected problem solver behavior to said means for performing a solver iteration step (FIG. 6, 8, 15)

- means for providing the problem solution to an output device (items 2547, 2549)

However, *Gounares et al* doesn't explicitly teach means for predicting expected solver behavior associated with said problem statement, means for reviewing said actual solver behavior incrementally to determine if a problem solution has been found, wherein reviewing comprises comparing said expected solver

behavior to said actual solver behavior, means for determining whether to perform a solver iteration step or to request an adaptation step if a problem solution has not been found, means for requesting performance of an adaptation step or means for performing an adaptation step, comprising modifying said configuration parameters, determining a revised expected problem solver behavior, and providing said modified configuration parameters and said revised expected problem solver behavior to said means for performing a solver iteration step while *Black* teaches,

- means for predicting expected solver behavior associated with said problem statement (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ... provide better representation"; column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")
- means for reviewing said actual solver behavior incrementally to determine if a problem solution has been found (column 13, lines 14-24, "An additional technique ... the termination criterion"), wherein reviewing comprises comparing said expected solver behavior to said actual solver behavior (column 3, lines 18-20, "The expression for ... training data output")
- means for determining whether to perform a solver iteration step (column 16, lines 20-31, "Automated optimization is ... set error goal") or to request an adaptation step (column 3, lines 42-50, "The weights throughout ... to the ANN") if a problem solution has not been found (Figs. 4-5, 13-14; column 6, lines 18-23,

"As a technical ... ANN training methods"; column 13, lines 14-24, "An additional technique ... the termination criterion")

- means for requesting performance of an adaptation step (Fig. 12; column 20, lines 17-40, "If at step ... any more weights")

- means for performing an adaptation step, comprising modifying said configuration parameters, determining a revised expected problem solver behavior, and providing said modified configuration parameters and said revised expected problem solver behavior to said means for performing a solver iteration step (column 3, lines 13-50, "Most training algorithms ... to the ANN")

Motivation – The portions of the claimed problem solver program would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal.

Regarding claim 35:

Gounares et al further teach,

- receiving a problem statement (FIGS. 1, 25; column 2, lines 54-60, "The above identified...population of organisms")

- configuring a problem solver with configuration parameters (column 5, lines 1-7, "The software testing...the target system"; column 12, lines 58-60, "The system of...application of mutagens"; column 25, lines 46-64, "The operation of...system for operation"; column 26, lines 5-28, "genetic testing engine...system under test")

- determining a set of configuration parameter vectors (column 8, lines 17-35, "The present invention...by product drivers"; column 18, lines 26-45, "Step 1005 and...to step 1007")

- determining expected solver behavior associated with said configuration parameters for said problem statement (column 2, lines 62-67, "the population of...by the user")

- searching for a solution with said configuration parameter vectors (column 18, lines 26-45, "Step 1005 and...to step 1007")

- determining actual solver behavior (column 23, lines 55-60, "the software testing...target software system")

- determining if a problem solution has been found, comprising comparing said expected solver behavior with said actual solver behavior (FIG. 22)

- performing said solver iteration step, when said solver iteration step is selected, comprising the steps of determining a new actual solver behavior and determining whether to repeat said iteration step (FIG. 4; column 4, lines 18-30, "Pairs of chromosomes...of test cases")

- transmitting a solution statement (FIGS. 23, 25: items 2553, 2554, 2548)

However, *Gounares et al* doesn't explicitly teach predicting expected solver behavior associated with said configuration parameters for said problem statement, determining if a problem solution has been found, comprising comparing said expected solver behavior with said actual solver behavior incrementally, determining whether to perform a solving iteration step or an adaptation step if a problem solution has not been found, repeating said solver iteration step until said adaptation step is selected, comparing said actual solver behavior with said expected solver behavior when said adaptation step is selected, performing said adaptation step, comprising the steps of modifying said configuration parameters, determining expected solver behavior associated with said modified configuration parameters, determining a revised actual solver behavior, reviewing said revised actual solver behavior to determine if a problem solution has been found, determining whether to perform said solver iteration step or to perform another adaptation step if a problem solution has not been found, and repeating said iteration step until said adaptation step is selected or repeating said adaptation step until a problem solution is found while *Black* teaches,

- predicting expected solver behavior associated with said configuration parameters for said problem statement (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ... provide better representation"; column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")

- determining if a problem solution has been found, comprising comparing said expected solver behavior with said actual solver behavior incrementally (column 3, lines 18-20, "The expression for ... training data output"; column 13, lines 14-24, "An additional technique ... the termination criterion")

- determining whether to perform a solving iteration step (column 16, lines 20-31, "Automated optimization is ... set error goal") or an adaptation step (column 3, lines 42-50, "The weights throughout ... to the ANN") if a problem solution has not been found (Figs. 4-5, 13-14; column 6, lines 18-23, "As a technical ... ANN training methods"; column 13, lines 14-24, "An additional technique ... the termination criterion")

- repeating said solver iteration step until said adaptation step is selected (column 13, lines 14-24, "An additional technique ... the termination criterion")

- comparing said actual solver behavior with said expected solver behavior when said adaptation step is selected (column 13, lines 14-24, "An additional technique ... the termination criterion")

- performing said adaptation step, comprising the steps of modifying said configuration parameters, determining expected solver behavior associated with said modified configuration parameters, determining a revised actual solver behavior, reviewing said revised actual solver behavior to determine if a problem solution has been found, determining whether to perform said solver iteration step or to perform another adaptation step if a problem solution has not been found, and repeating said iteration step until said adaptation step is selected (column 3, lines 13-50, "Most training algorithms ... to the ANN")

- repeating said adaptation step until a problem solution is found (column 13, lines 14-24, "An additional technique ... the termination criterion")

Motivation – The portions of the claimed method would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal.

Regarding claim 36:

The rejection of claim 36 is similar to that for claim 35 as recited above since the stated limitations of the claim are set forth in the references. Claim 36's limitations difference is taught in *Gounares et al*:

- an adaptive constraint problem solving method (column 11, lines 42-67, "A further type...the target system")

Regarding claim 37:

The rejection of claim 37 is similar to that for claim 35 as recited above since the stated limitations of the claim are set forth in the references. Claim 37's limitations difference is taught in *Gounares et al*:

- refining the configuration parameters (FIG. 10)

Regarding claim 38:

The rejection of claim 38 is similar to that for claim 35 as recited above since the stated limitations of the claim are set forth in the references. Claim 38's limitations difference is taught in *Gounares et al*:

- the step of transforming said problem statement (FIG. 4)

Black:

- the step of transforming said problem statement (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 39:

The rejection of claim 39 is similar to that for claim 35 as recited above since the stated limitations of the claim are set forth in the references. Claim 39's limitations difference is taught in *Gounares et al*:

- the step of transforming said problem solution (FIG. 8)

Black:

- the step of transforming said problem solution (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 40:

The rejection of claim 40 is similar to that for claim 35 as recited above since the stated limitations of the claim are set forth in the reference. Claim 40's limitations difference is taught in *Black*:

- said configuration parameters include problem configuration parameters and solver configuration parameters (Fig. 3; column 1, lines 26-35, "an ANN is ...

training data outputs" ; The examiner notes that the problem and solver configuration parameters are different layers of a multiple layer neural network.)

Regarding claim 41:

The rejection of claim 41 is similar to that for claim 40 as recited above since the stated limitations of the claim are set forth in the reference. Claim 41's limitations difference is taught in *Black*:

- transforming said problem configuration parameters (column 2, lines 37-40, "a consideration raised ... the transfer function")

Regarding claim 42:

The rejection of claim 42 is similar to that for claim 35 as recited above since the stated limitations of the claim are set forth in the references. Claim 42's limitations difference is taught in *Gounares et al*:

- selecting an initial minimum point (column 10, TABLE 3, Before a_1)

- performing a local search (column 4, lines 1-17, "In general, the...high fitness rating")

- evaluating actual behavior to determine whether to repeat a local search or select a different solver algorithm (FIG. 22)

- repeating a local search with a second minimum point when the step of repeating a local search is selected (column 20, lines 1-20, "A process of...to step 2105")

- revising the set of configuration parameter vectors for each search performed (column 4, lines 18-30, "Pairs of chromosomes...or test cases")

Black:

- choosing a set of default configuration parameter vectors (Abstract, "A method and ... final trained state" column 19, lines 50-54, "If at block 106 ... default initial value")

- selecting an algorithm for calculating a problem solution (column 4, lines 64-67, "the present invention ... initializes an artificial"; column 5, lines 1-4, "neural network by ... artificial neural network")

Regarding claim 43:

The rejection of claim 43 is similar to that for claim 35 as recited above since the stated limitations of the claim are set forth in the references. Claim 43's limitations difference is taught in *Black*:

- selecting an algorithm for calculating a problem solution (column 4, lines 64-67, "the present invention ... initializes an artificial"; column 5, lines 1-4, "neural network by ... artificial neural network")

Regarding claim 45:

Gounares et al teaches,

- receiving a problem statement from the applications module (FIGS. 1, 25; column 2, lines 54-60, "The above identified...population of organisms")

- an expected problem solver behavior associated with configuration parameters for said problem statement (column 2, lines 62-67, "the population of...by the user")

- providing the solving module with said configuration parameters (column 5, lines 1-7, "The software testing...the target system"; column 12, lines 58-60, "The system of...application of mutagens"; column 25, lines 46-64, "The operation

of...system for operation"; column 26, lines 5-28, "genetic testing engine...system under test")

- selecting a set of configuration parameter vectors (FIGS. 17-18; column 10, lines 23-30, "A property delta...system under test"; TABLE 3)

- determining a set of search space points (column 8, lines 17-35, "The present invention...by product drivers")

- perform a partial search with said configuration parameter vectors (column 18, lines 26-45, "Step 1005 and...to step 1007")

- determining actual solver behavior (column 23, lines 55-60, "the software testing...target software system")

- reviewing said actual solver behavior to determine if a problem solution has been found, wherein reviewing comprises comparing said expected solver behavior with said actual solver behavior (FIG. 22; column 11, lines 8-24, "Whenever a chromosome ... additional notational conveniences")

- performing a said solver iteration step when said solver iteration step is selected, comprising the steps of determining new actual solver behavior and determining whether to repeat said solver iteration step (FIG. 4; column 4, lines 18-30, "Pairs of chromosomes...of test cases")

- providing the solution to the applications module (FIG. 23)

However, *Gounares et al* doesn't explicitly teach predicting an expected problem solver behavior associated with configuration parameters for said problem statement, reviewing said actual solver behavior incrementally to determine if a problem solution has been found, wherein reviewing comprises comparing said

expected solver behavior with said actual solver behavior, determining whether to perform a solver iteration step or to request the complexity module to perform an adaptation step if a problem solution has not been found, repeating said solver iteration step until said adaptation step is selected, comparing said actual solver behavior with said expected solver behavior when said adaptation step is selected, requesting the complexity module to perform said adaptation step, performing said adaptation step, comprising the steps of modifying said configuration parameters within the complexity module, configuring the solving module with said modified configuration parameters, determining expected solver behavior associated with said modified configuration parameters for said problem statement, selecting an algorithm to calculate a revised problem solution, determining a revised actual solver behavior associated with said modified configuration parameters for said problem statement, reviewing said revised actual solver behavior to determine if a problem solution has been found, determining whether to perform said solver iteration step or to request the complexity module to perform another adaptation step if a problem solution has not been found, and repeating said iteration step until said adaptation step is selected or repeating said adaptation step until a problem solution is found while *Black* teaches,

- predicting an expected problem solver behavior associated with configuration parameters for said problem statement (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ... provide better representation"; column 22, lines 66-67, "System

201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")

- reviewing said actual solver behavior incrementally to determine if a problem solution has been found (column 13, lines 14-24, "An additional technique ... the termination criterion"), wherein reviewing comprises comparing said expected solver behavior with said actual solver behavior (column 3, lines 18-20, "The expression for ... training data output")

- determining whether to perform a solver iteration step or to request the complexity module to perform an adaptation step if a problem solution has not been found (column 3, lines 42-50, "The weights throughout ... to the ANN "; column 16, lines 20-31, "Automated optimization is ... set error goal")

- repeating said solver iteration step until said adaptation step is selected (column 13, lines 14-24, "An additional technique ... the termination criterion")

- comparing said actual solver behavior with said expected solver behavior when said adaptation step is selected (column 13, lines 14-24, "An additional technique ... the termination criterion")

- requesting the complexity module to perform said adaptation step (Fig. 12; column 20, lines 17-40, "If at step ... any more weights")

- performing said adaptation step, comprising the steps of modifying said configuration parameters within the complexity module, configuring the solving module with said modified configuration parameters, determining expected solver behavior associated with said modified configuration parameters for said problem statement, selecting an algorithm to calculate a revised problem solution,

determining a revised actual solver behavior associated with said modified configuration parameters for said problem statement, reviewing said revised actual solver behavior to determine if a problem solution has been found, determining whether to perform said solver iteration step or to request the complexity module to perform another adaptation step if a problem solution has not been found, and repeating said iteration step until said adaptation step is selected (column 3, lines 13-50, "Most training algorithms ... to the ANN")
- repeating said adaptation step until a problem solution is found (column 13, lines 14-24, "An additional technique ... the termination criterion")

Motivation – The portions of the claimed article of manufacture would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal.

Claims 18-21 and 30-33 are rejected under 35 U.S.C. 103(a) as being obvious over *Gounares et al* in view of *Black* and in further view of *Kimbel et al* USPN 5,517,654 "System for parallel implementation of combinatorial

optimization in a multiprocessor network for generating search graphs for solving enumerative problems" (May 14, 1999).

Regarding claim 18:

Gounares et al further teach,

- an input device for providing the problem statement (FIG. 25: items 2540, 2542, 2549)

- a computer coupled to the output of said input device (FIG. 25: items 2520, 2521)

- a memory portion coupled to the computer comprising (FIG. 25: item 2522):

- software for receiving the problem statement from said input device (item 2526)

- software for determining solver configuration parameter vectors (item 2535)

- software for configuring a problem solver (item 2536)

- software for performing a partial search with said configuration parameter vectors (item 2555)

- software for determining actual solver behavior and determining whether a solution has been found, wherein determining whether a solution has been found comprises comparing said expected solver behavior and said actual solver behavior (item 2527; column 11, lines 8-24, "Whenever a chromosome ... additional notational conveniences")

- output means for providing a solution statement (items 2547, 2549)

However, *Gounares et al* doesn't explicitly teach software for predicting expected solver behavior, software for determining actual solver behavior and incrementally determining whether a solution has been found, wherein

determining whether a solution has been found comprises comparing said expected solver behavior and said actual solver behavior, software for determining whether to perform a solver iteration step or to perform an adaptation step, software for performing an adaptation step, comprising modifying said configuration parameters and reconfiguring said problem solver or the computer includes an embedded computer while *Black* teaches,

- software for predicting expected solver behavior (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ... provide better representation"; column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")
- software for determining actual solver behavior and incrementally determining whether a solution has been found (column 13, lines 14-24, "An additional technique ... the termination criterion"), wherein determining whether a solution has been found comprises comparing said expected solver behavior and said actual solver behavior (column 3, lines 18-20, "The expression for ... training data output")
- software for determining whether to perform a solver iteration step or to perform an adaptation step (column 3, lines 42-50, "The weights throughout ... to the ANN "; column 16, lines 20-31, "Automated optimization is ... set error goal")
- software for performing an adaptation step, comprising modifying said configuration parameters and reconfiguring said problem solver (Fig. 12; column

3, lines 13-50, "Most training algorithms ... to the ANN"; column 20, lines 17-40, "If at step ... any more weights")

Kimbel et al teaches,

- the computer includes an embedded computer (column 7, lines 15-24, "A high level ... to be expanded")

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")
- Refining solutions for enumerative problems while providing nearly 100% utilization in a multiprocessor network (*Kimbel et al*, Abstract, "The method and ... ordered expansion queues")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* and *Kimbel et al* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal as well as refining solutions for enumerative problems while providing nearly 100% utilization in a multiprocessor network.

Regarding claim 19:

The rejection of claim 19 is similar to that for claim 18 as recited above since the stated limitations of the claim are set forth in the references. Claim 19's limitations difference is taught in *Gounares et al*:

- said embedded computer system controls at least one operation within a copier or printer (column 7, lines 35-53, "A number of...speakers and printers")

Regarding claim 20:

The rejection of claim 20 is similar to that for claim 18 as recited above since the stated limitations of the claim are set forth in the references. Claim 20's limitations difference is taught in *Kimbel et al*:

- said embedded computer system controls at least one operation within a process control system (column 2, lines 14-34, "It is therefore ... the multiprocessor network")

Regarding claim 21:

The rejection of claim 21 is similar to that for claim 18 as recited above since the stated limitations of the claim are set forth in the references. Claim 21's limitations difference is taught in *Black*:

- said embedded computer system controls at least one operation within a diagnostics unit (column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")

Regarding claim 30:

Gounares et al further teach,

- an input device for providing the primary goal for the task to be performed (FIG. 25: items 2540, 2542, 2549)

- a computer coupled to the output of said input device (FIG. 25: item 2520)

- a memory portion coupled to said computer comprising (FIG. 25):

- a complexity module for configuring a problem statement and determining expected solver behavior (FIG. 4)

- a synthesis module for determining configuration parameter vectors (FIG. 8)

- comparison means for comparing said actual solver behavior with said expected solver behavior and determining whether a problem solution has been found (items 404, 418, 1003, 1006, 1500, 2108, 2202, 2207, 2521; FIG. 22; column 11, lines 8-24, "Whenever a chromosome ... additional notational conveniences")

- output means for providing a statement of the problem solution (items 2547, 2549)

However, *Gounares et al* doesn't explicitly teach a complexity module for configuring a problem statement and predicting expected solver behavior, a controllable solving module coupled to said complexity module for determining actual solver behavior or said control computer comprises an embedded computer while *Black* teaches,

- a complexity module for configuring a problem statement and predicting expected solver behavior (Fig. 14; column 17, lines 66-67, "FIG. 11 shows a ... diagram demonstrating the"; column 18, lines 1-26, "real-time prediction and ... provide better representation"; column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")

- a controllable solving module coupled to said complexity module (column 16, lines 20-31, "Automated optimization is ... set error goal") for determining actual

solver behavior (column 13, lines 14-24, "An additional technique ... the termination criterion")

Kimbel et al teaches,

- said control computer comprises an embedded computer (column 7, lines 15-24, "A high level ... to be expanded")

Motivation – The portions of the claimed system would have been a highly desirable feature in this art for

- Adaptively increasing the size of the training dataset to achieve a desired error goal (*Black*, column 6, lines 33-34, "adaptively increase the ... desired error goal")
- Refining solutions for enumerative problems while providing nearly 100% utilization in a multiprocessor network (*Kimbel et al*, Abstract, "The method and ... ordered expansion queues")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify *Gounares et al* as taught by *Black* and *Kimbel et al* for the purpose of adaptively increasing the size of the training dataset to achieve a desired error goal as well as refining solutions for enumerative problems while providing nearly 100% utilization in a multiprocessor network.

Regarding claim 31:

The rejection of claim 31 is similar to that for claim 30 as recited above since the stated limitations of the claim are set forth in the references. Claim 31's limitations difference is taught in *Gounares et al*:

- said embedded computer system controls at least one operation within a copier or printer (column 7, lines 35-53, "A number of...speakers and printers")

Regarding claim 32:

The rejection of claim 32 is similar to that for claim 30 as recited above since the stated limitations of the claim are set forth in the references. Claim 32's limitations difference is taught in *Kimbel et al*:

- said embedded computer system controls at least one operation within a process control system (column 2, lines 14-34, "It is therefore ... the multiprocessor network")

Regarding claim 33:

The rejection of claim 33 is similar to that for claim 30 as recited above since the stated limitations of the claim are set forth in the references. Claim 33's limitations difference is taught in *Black*:

- said embedded computer system controls at least one operation within a diagnostics unit (column 22, lines 66-67, "System 201 depicts a ... stock market predictions 400"; column 23, lines 1-2, "output for example ... share value predictions")

RESPONSE TO APPLICANTS' AMENDMENT REMARKS

Applicant(s) argue(s) that no new matter has been added in the amendment of claims 1, 3, 10, 18, 22, 30, 34-35 and 37-42, the drawings, the

specification, Information Disclosure and the cancellation of claim 44 (Amendment REMARKS page 20, paragraph 1).

Information Disclosure Statement

Applicant(s) argue(s) that the Information Disclosure is amended to include the omitted publication date of an item (Amendment REMARKS page 20, paragraph 1).

Allen et al's publication date of May 1966 is noted on the 5/17/04 Information Disclosure Statement.

Drawings, Specification

Applicant(s) argue(s) that the amended drawings and specification correct minor errors previously noted (Amendment REMARKS page 20, paragraph 1).

The amendments to the drawings (Figs. 4-6) and the specification (paragraphs beginning on page 1, line 13, page 19, line 24 through page 21, line 28, page 22, line 27 through page 24, line 2, page 25, line 18 through page 26, line 25, page 27, line 6) have been entered and examined. The objections to the drawings in the prior office action are withdrawn. However, it is noted that the reference to solver model 590 (SPECIFICATION Amendment page 3, paragraph 2) would read well as solver model 510.

Claim Rejections - 35 USC § 101

Applicant(s) argue(s) that amended claims 34-35 have utility reflecting a practical application in the technological arts and that new claim 45 replacing canceled claim 44 is directed to a computer readable medium (Amendment REMARKS page 20, paragraph 2).

Applicant's arguments have been fully considered and are persuasive. The 35 USC § 101 rejection of claims 34-35 and 44 have been withdrawn.

Claim Rejections - 35 USC § 112, second paragraph

Applicant(s) argue(s) that claims 1, 3, 18, 30, 37-40 and 42 have antecedent bases (Amendment REMARKS page 20, paragraph 3).

Applicant's arguments have been fully considered and are persuasive. The 35 USC § 112, 2nd paragraph antecedent bases rejection of claims 1, 3, 18, 30, 37-40 and 42 have been withdrawn.

Claim Rejections - 35 USC § 102

Applicant(s) argue(s) that Gounares does not teach the subject application's 1) complexity module selecting among many possible solving models and various solving algorithms (Amendment REMARKS page 21, paragraph 3), 2) complexity prediction (Amendment REMARKS page 22, paragraph 1) and 3) adaptation of the algorithm (Amendment REMARKS page 22, paragraph 2). Applicant's 35 USC 102 arguments with respect to claims 1-17, 22-29, 34-41 and 43 have been considered but are moot in view of new

ground(s) of rejection. The examiner agrees that Gounares does not disclose the complexity module, complexity prediction and algorithm adaptation of the subject application. However, column 16, lines 20-31 of Black USPN 6,269,351 is cited for explicitly and inherently disclosing the subject matter set forth in the claims by the applicants.

Applicant(s) argue(s) that Gounares does not teach the subject application's generation and evaluation of solutions incrementally (Amendment REMARKS page 22, paragraph 3 and page 23, paragraph 1). Applicant's 35 USC 102 arguments with respect to claims 1-17, 22-29, 34-41 and 43 have been considered but are moot in view of new ground(s) of rejection. The examiner agrees that Gounares does not disclose the incremental generation and evaluation of solutions in the subject application. However, column 13, lines 14-24 of Black is cited for explicitly and inherently disclosing the subject matter set forth in the claims by the applicants. Further, column 6, lines 33-34 of Black provides adaptively increasing the size of the training dataset to achieve a desired error goal as the purpose and motivation for combining the references.

As set forth above with regards to Gounares, Black and Kimbel, the items listed explicitly and inherently teach each element of the applicants' claimed limitations. Applicants have not set forth any distinction or offered any dispute between the claims of the subject application, Gounares' Method and apparatus for adaptively solving sequential problems in a target system utilizing evolutionary computation techniques, Black's Method and system for training an artificial neural network and Kimbel's System for parallel implementation of

combinatorial optimization in a multiprocessor network for generating search graphs for solving enumerative problems.

Claim Rejections - 35 USC § 103

Applicant(s) argue(s) that Gounares does not teach the subject application's complexity module and its interaction with the solver module, complexity prediction, adaptation and incremental generation and evaluation of solutions (Amendment REMARKS page 23, paragraph 5). Applicant's 35 USC 102 arguments with respect to claims 1-17, 22-29, 34-41 and 43 have been considered but are moot in view of new ground(s) of rejection. The examiner agrees that Gounares does not disclose the complexity module and its interaction with the solver module, complexity prediction, adaptation and incremental generation and evaluation of solutions of the subject application. However, column 13, lines 14-24 and column 16, lines 20-31 of Black USPN 6,269,351 are cited for explicitly and inherently disclosing the subject matter set forth in the claims by the applicants. Further, column 6, lines 33-34 of Black provides adaptively increasing the size of the training dataset to achieve a desired error goal as the purpose and motivation for combining the references.

As set forth above with regards to Gounares, Black and Kimbel, the items listed explicitly and inherently teach each element of the applicants' claimed limitations. Applicants have not set forth any distinction or offered any dispute between the claims of the subject application, Gounares' Method and apparatus for adaptively solving sequential problems in a target system utilizing

evolutionary computation techniques, Black's Method and system for training an artificial neural network and Kimbel's System for parallel implementation of combinatorial optimization in a multiprocessor network for generating search graphs for solving enumerative problems.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- *Black;* USPN 6,269,351;6 "Method and system for training an artificial neural network"

Any inquiry concerning this communication or earlier communications from the Office should be directed to Meltin Bell whose telephone number is 571-272-3680. This Examiner can normally be reached on Mon - Fri 7:30 am - 4:30 pm.

If attempts to reach this Examiner by telephone are unsuccessful, his supervisor, Anthony Knight, can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

Anthony Knight
Supervisory Patent Examiner
Group 3600

MB